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Shooting the Messenger:

Ironic Effects of Imbalance in

Anti-drug Messages from Celebrities

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Shooting the Messenger:

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Anti-drug Messages from Celebrities

by

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To my family

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It is as easy to imagine that celebrities featured in anti-drug commercials uniformly encourage all viewers to abstain from drugs, as it is to imagine that the more closely viewers watch these commercials, the more effective the messages will be. The current research reconsiders both assumptions. Highly anti-marijuana (state of balance) and highly pro-marijuana (state of imbalance) viewers were selected, and their processing style (central vs. peripheral) was manipulated as they watched commercials (with anti-marijuana messages from celebrities for whom all viewers previously reported high appeal). The dependent measures were SOA (Strength of Association conveys the likelihood that attitudes will automatically activate to guide behavior related to marijuana), change in celebrity appeal (pre- to post-commercial), and level of counter-

argument after the messages. The findings confirm past research (Wagner and Sundar, 2003) suggesting that a peripheral processing style is more effective than central processing, in terms of SOA. They also suggest the usefulness of balance theory (Heider, 1946; Osgood and Tannenbaum, 1966) in studying media effects. In particular, they help understand how the presence of a celebrity, instead of leading to a decrease in the appeal of drugs for its viewers, may have unintended effects of a decrease in the appeal of the celebrity bearing the anti-drug message, and of greater counter-argument after the message. Ironically, these unintended effects were characteristic mostly of pro-marijuana viewers who employed a central message processing style; this suggests that advertisers need to reconsider the effectiveness of this genre of messages, and underscores the relevance of social psychology to mass communication.

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Chapter 1

Introduction

1.1. Balance Theory: Conception and Relevance

Consider a scenario wherein an anti-marijuana viewer is flipping through channels on a television, and sees a commercial featuring a popular celebrity advocating against the use of marijuana. Upon seeing the commercial, it is likely that the viewer will reaffirm his or her negative attitude towards marijuana and positive attitude to the celebrity. Now consider the same scenario, but with a pro-marijuana viewer instead. The sight of the celebrity might lure the viewer in to watching the commercial, but it also brings into question the effect that the message from the celebrity will have on the viewer. The concurrent activation of the viewer's positive attitude towards marijuana and positive attitude to the celebrity makes for a precarious situation, and it raises doubts about the effectiveness of these types of commercials.

The scenarios above can be mapped (see Figure 1) onto the states of balance and imbalance described by balance theory (Heider, 1946; Heider, 1958), the central hypothesis of which is that a tendency towards balanced states exists in human interaction. Balance theory is part of a group of theories, such as Newcomb's symmetry theory (1953), Osgood and Tannenbaum's congruity theory (1955), and Festinger's cognitive dissonance theory (1957), all based on the framework of cognitive consistency. According to these theories, human beings

have a tendency for harmony of thoughts and are driven to reconcile imbalanced or incongruent thoughts by changing attitudes.

Most authors credit Fritz Heider (1946) with the earliest articulation of a consistency theory. According to Heider, "the concept of a balanced state designates a situation in which the perceived units and the experienced sentiments co-exist without stress" (1958, p.176). In Heider's paradigm, "a balanced state exists if all three relations are positive in all respects or if two are negative and one is positive" (1946, p. 110). All other combinations are considered imbalanced. In this study, the state of balance is characterized by a viewer who reports high celebrity appeal and low marijuana appeal, while the state of imbalance is characterized by the viewer who reports high celebrity and high marijuana appeal.

A state of imbalance tends to shift towards balance because the former is associated with psychological tension or discomfort stemming from disharmonious cognitions (Heider; 1946, 1958). The psychological discomfort associated with imbalance is well-described by an example, given by Woodside and Chebat (2001), of the story of a Jewish couple contemplating buying a German car. In the anecdote, the husband and author, William Posner, describes how both he and his wife feel antagonistic towards all German cars, but especially the "lowly Volkswagen" that Hitler supposedly helped design, till they become enamored by a New Beetle. He gives a humorous account of an

unsettling state of imbalance, in which they try to reconcile their highly negative attitude towards Germans and German cars, and their recently developed highly positive attitude towards the reformulated Volswagen. This mental battle continues long after they place an order for the car--Posner describes a visit to the movies to watch a Nazi movie, on the eve of the day their new car is to be delivered, as if to muster up negative emotions enough to cancel the order at the last minute.

Psychological discomfort leads to the creation of internal forces that motivate people to reduce it by changing their attitudes, cognitions, or behavior, in order that balance may be restored (Heider; 1946, 1958). In the case of the Jewish couple, the story ends with their being able to make less negative their attitude to German cars based tenuously on Volkswagen's decision to pay paltry reparations to war time slave laborers. In the case of anti-marijuana celebrity commercials, the state of imbalance (pro-marijuana viewer, anti-marijuana celebrity) can be resolved if the viewer changes the attitude to marijuana (becomes more anti-marijuana via his or her passive acceptance of the message). However, one can imagine other and more active ways to resolve the imbalance. The set of imbalanced thoughts ("I like marijuana", and "I like [the celebrity]", but "[The celebrity] does not like marijuana") can be balanced by changing either the attitude to marijuana ("I now dislike marijuana") or changing the attitude to the celebrity ("I now dislike [the celebrity]").

1.2. Resolution of Imbalance: Unintended Effects

Crimmins and Horn (1996) suggested the principle of cognitive consistency as an explanation for the consumer response to Visa's sponsorship of the U.S. Olympic Committee. They found that this already favored credit card, doubled its percentage point perceived superiority over MasterCard, by sponsoring the U.S. Olympic Committee during the summer of 1992. This change occurred despite intense advertising by MasterCard. Consumers apparently thought more highly of Visa because the brand was linked to a very well-liked event through sponsorship. That is, the attitude appears to have changed from positive to even more positive.

Making positive attitudes more positive is often the goal of persuasion, but it is the goal of dissuasion, to make positive attitudes less positive, produce negative attitudes, or make negative attitudes more negative. Dissuasion is, of course, a form of argumentation in which the recipient of such an appeal is exhorted not to do something (e.g., take drugs, smoke, or litter) as opposed to do something (e.g., try a brand, continue to buy a product, or sign up for a service). It is understandable why the message recipient may be more eager to resist dissuasion rather than persuasion--especially when, in the process of dissuasion, a favored concept (marijuana, in this instance) is derogated. Tannenbaum, McCaulay, and Norris (1966) applied the principle of balance to the study of resistance to persuasion; it has been extrapolated here, by example, to the

concept of dissuasion. When a favorable source makes a negative assertion about a favored concept, and the recipient is motivated to maintain the attitude to the concept (in this instance, owing to the highly pro-marijuana attitude of the viewer), there are five ways of restoring balance. The first two ways of restoring balance involve changes in attitude towards the celebrity messenger, the next two ways pertain to the reactions to the message brought by the celebrities, and the last way relates to the attitude being targeted for change.

(1) Derogation: Changing the attitude towards the source.

E.g., "*I liked [the celebrity] before this commercial, but now I am not so sure.*"

(2) Differentiation: Compartmentalizing the source and the message.

E.g., "*I usually like [the celebrity] but [he or she] is just awful in commercials.*"

(3) Denial: Severing the cognitive link between source and concept.

E.g., "*[The celebrity] is not anti-marijuana; [he or she] is in it for the money.*"

(4) Refutation: Invalidating the assertion made by attacking its validity.

E.g., "*Look, we all know that marijuana is neither addictive nor dangerous.*"

(5) Concept Boost: Strengthening the attitude towards the object.

E.g., "*Not only does marijuana make me feel good, it also makes me look cool.*"

Counterarguments are activated when the information in the message is discrepant with the receiver's beliefs (Meirick, 2002). When viewers are significantly pro-marijuana and hold great initial regard for the featured celebrities, viewing anti-marijuana messages from these celebritues immerses

them in a state of imbalance. The first set of hypotheses in this study is based on the reasoning that there is a high likelihood of their changing attitudes towards previously liked celebrities (derogation) and greater counter-argument (derogation, differentiation, denial, refutation, and concept boost) in the face of the imbalance-generating messages.

> **H1a: Viewers who report high appeal for marijuana and high appeal for the celebrities, or rather those in such a state of imbalance will show a greater change in attitudes towards celebrities--more specifically a greater decrease in celebrity appeal--than those participants who report low appeal for marijuana and high appeal for celebrities, or rather those in a state of balance.**
>
> **H1b: Viewers in a state of imbalance will exhibit greater counter-argument than viewers in a state of balance when exposed to an anti-marijuana message.**

While a decreased appeal for the celebrities and greater counterargument of the messages they bring may result in the commercial not being as effective as planned, concept boost could have even more counterproductive effects, since it would lead to the viewers becoming more pro-marijuana than they were before they viewed the anti-marijuana message. However, attitudes towards an illegal substance such as marijuana are difficult to address using self-reports (Weber and Cook, 1972) and although there is a relevant explicit measure included in the study, hypotheses were generated only for the implicit measure, and are described subsequently.

1.3. Adding to Self-reports: Strength of Association

By virtue of the timeframe--the framework of cognitive consistency abounded in the 1950s and 1960s--their methodology has relied almost exclusively on self-reports. While self-report measures are helpful, they are also susceptible to such artifacts as demand characteristics (Orne, 1962), evaluation apprehension (Rosenberg, 1969), situational norm confounds (Dovidio & Fazio, 1991; Fazio & Towles-Schwen, 1999), and impression management (Tedeschi et al., 1971) despite promises of anonymity (Fazio, 1986). In the late 1980s and early 1990s, there were significant development of indirect measures in social cognition research (e.g., Jacoby, Lindsay, & Toth, 1992; Schacter, 1987) based on which useful alternatives that provide access to a cognitive domain not reached by self-report measures began to surface (Bargh, 1997; Fazio, Jackson, Dunton, & Williams, 1995; Greenwald & Banaji, 1995). These measures were initially developed to alleviate the problem of obtrusive measures in stereotyping research, but given that the similar problems beleaguer other areas of research as well, Greenwald, McGhee, and Schwartz's (1998) Implicit Association Test (IAT) has been adapted to measure implicit attitudes to concepts such as illicit drugs (Wagner, 2001).

More generally, Strength of Association (SOA) measures the ease with which a psychological connection is made between the concept being tested and both positivity and negativity, without asking respondents overt questions about their attitudes. In so doing, implicit attitude measures reduce the chances that

participants will—knowingly or not—falsely represent themselves, and therefore these measures may provide a more inclusive picture of their latent attitude. More specifically to this study, the SOA measure examines the extent to which "priming" participants with attitude objects (e.g., exposing them briefly to concepts such as "drugs" or "race" or "brands") hinders or facilitates the speed with which they can correctly categorize each of subsequently presented pairs of adjectives such as "marijuana" and "cool" or "weed" and "bad" (Wagner, 2001). The differential score obtained from correct categorization of the pairs in question (i.e., marijuana--positivity and marijuana--negativity) represents the SOA. It is thus categorized as a response latency measure (see Fazio, Sanbonmatsu, Powell, & Kardes, 1986). SOA measures are said to differ from self-report measures by their consideration of automatic attitude activation during decision-making, which tends to be spontaneous and unreasoned more than deliberate and reasoned, especially in the case of drugs (Wagner, 2001). For example, drug-related SOA measures assess the likelihood that stored drug associations will activate spontaneously upon encountering the attitude object of drugs. In so doing, SOA is said to reveal the way that information stored in memory may directly affect decision-making (Dovidio & Fazio, 1991; Fazio, 1990).

There has however been recent concern about the construct validity of implicit measures (see Brendl, Markman, & Messner, 2001). This inexplicability

of the implicit has been addressed by researchers such as DeCoster, Banner, Smith, & Sevin (2006). They provide evidence for the idea that there are two distinct memory systems involved--a "slow-learning" memory system that reflects simple associations that can be reported explicitly, and a "fast-binding" memory system that reflects contextually dependent memories that can be accessed by implicit measures. According to Fazio (1991), a significant part of the problem in comparing these types of measures is that few studies have been conducted that were inclusive of the implicit and the explicit, and hence both types of measures were included in this study.

Participants in this study were selected on the basis of self-reports--only viewers that were highly anti-marijuana or highly pro-marijuana were eligible for the study. These two sets of participants were exposed to anti-marijuana messages from celebrities that they previously reported high appeal for, respectively creating states of balance and imbalance. Considering that in the few studies in which implicit and explicit measures have been compared, significant correlations have been noted (see Fazio, 1990), and given the systematic polarization of these participants' attitudes, it was hypothesized that their explicit attitudes, in concert with the respective states of balance and imbalance, would be reflected in their SOA.

H2: Viewers, who report high appeal for marijuana and high appeal for celebrities, or rather those in such a state of balance, will show more

negative SOA after viewing anti-marijuana messages from celebrity spokespersons, as compared to viewers who report high appeal for both marijuana and the celebrities, or rather those in such a state of imbalance.

Another variable that has significant consequences for SOA is the style of message processing; in the next section, the theoretical bridge between the two concepts is explained and relevant hypotheses are generated.

1.4. Wagner's "Theoretical Bridge": Processing Style and SOA

Petty and Cacioppo (1986) formulated the Elaboration Likelihood Model (ELM) which posits two information processing strategies: a more effortful, "central route" and a less effortful "peripheral route." When using ELM's central processing route, people actively engage and intensely scrutinize persuasive message information and arguments toward forming (or reforming) an attitude by subsequent assimilation of agreed-upon tenets. However, when using ELM's peripheral processing route, people passively process an ad in forming an association for a given attitude object; it is a less-effortful learning of associations between attitude objects and the descriptors with which the persuasive message pairs them. In other words, it is associative learning (Smith & DeCoster, 1999), which leads to the automatic activation of a descriptor cue in connection with an object cue (e.g., puppies/cute). Associative learning is the process by which SOA is theorized to change (Fazio, 1990, p. 81).

Based on this reasoning, Wagner and Sundar (2003) undertook an elaborate study in which viewers' motivation and opportunity to view the ads were manipulated, to induce either central or peripheral processing of anti-drug messages. The experimental manipulation was based on Fazio's model (1990) of Motivation and Opportunity as Determinants of Elaboration (MODE) since motivation and opportunity are also determinants of ELM (Petty & Wegener, 1999). Participants were in one of four conditions, based on a 2X2 factorial design crossing motivation and opportunity to watch anti-drug commercials. The conditions were hence low motivation and low opportunity, low motivation and high opportunity, high motivation and low opportunity, and high motivation and high opportunity. Wagner and Sundar found a significant difference in SOA, with viewers that used the most central processing style (high motivation and high opportunity to watch) showing more anti-marijuana SOA than those that used the most peripheral processing style (low motivation and low opportunity to watch). The results indicate that anti-drug attitudes are more likely to be activated automatically when viewers process messages peripherally rather than centrally. The following hypothesis was based on the research of Wagner and Sundar (2003).

> **H3: Those viewers who have low motivation and low opportunity to process anti-drug messages (i.e., those who process it peripherally) will show more negative SOA as compared to those who process the anti-drug commercials with high motivation and high opportunity (i.e., those who process it centrally).**

1.5. An Integrated Approach: Balance, Processing Style, and SOA

Recently, researchers such as Solomon (1999), Woodside and Chebat (2001), Greenwald and Banaji et al (2002) have delved in to a deeper analysis of why implicit, subconscious, and automatic cognitive dynamics are as important as explicit, conscious, and controlled reasoning processes in dealing with states of imbalance and associated behavior. For instance, Heider recognized that conscious thinking need not occur in the effort to resolve imbalance: "In this connection, it is important to emphasize that actions which bring about one's own pleasure need not presuppose conscious and calculated means-end reasoning" (1958, pp. 214). He predicted that automatic thinking is most likely to be overridden when a person recognizes a subjective tension arising from the imbalance. This led Woodside and Chebat to make the connection between the information processing types and the mechanics of dealing with imbalance. In essence, they point out that when the route to persuasion is central, the situation is more conducive to explicit, active, and controlled ways of dealing with imbalance. However, when the route to persuasion is peripheral, it is important to measure the implicit, passive, and non-controlled nature of pre-conscious processing that occurs.

While most commercials aim to invoke a more central route to persuasion, it is--and counter-intuitively so--the more peripheral route that seems most likely

to spontaneously activate anti-drug attitudes that guide behavior (Wagner & Sundar, 2003). One of the reasons offered as to why this occurs is that when viewers watch the commercials with a central processing style, they have more access to the arguments presented. If they are highly involved with the message and the celebrity, careful scrutiny should make them capable of greater counter-argument of the anti-drug message (see Hawkins & Hoch, 1992) and greater derogation of featured celebrities. This ties in to the first four ways of restoring balance, described by Osgood and Tannenbaum.

> **H4a: Of those viewers that that are in a state of imbalance, there will be more change in attitudes towards celebrities, specifically a greater decrease in celebrity appeal, for those that process anti-marijuana messages centrally rather than peripherally.**
>
> **H4b: Of those viewers that are in a state of imbalance, there will be more counter-argument in those that process anti-drug messages centrally rather than peripherally.**

1.6. Present Study: An Overview

The proposed study seeks to address this question of interaction between state of balance and type of message processing in relation to the five ways that balance could be restored without changing the attitude designed to be modified by the anti-marijuana commercials. Participants reported their pre-commercial attitudes to marijuana and celebrities online a few weeks prior to the testing session. Based on these self-reports, they were classified as being in a state of balance (low marijuana appeal, high celebrity appeal) or imbalance (high

marijuana appeal, low celebrity appeal) and then made to view anti-marijuana commercials either under the condition of central processing (high motivation, high opportunity) or peripheral processing (low motivation, low opportunity). After this, participants completed three main dependent measures based on which the main hypotheses were tested: 1) Post-commercial SOA (to measure implicit attitude to marijuana); 2) Change in self-reported pre-commercial appeal of celebrities (to measure source-derogation); and 3) Counterargument (explicit self-reports of denial, refutation, concept boost, source derogation and differentiation). Although no hypotheses were formulated for the change in self-reported pre-commercial appeal of marijuana, outcomes were tested and are reported as part of the results.

Chapter 2

Method

2.1. Participants

Prior to the study, participants completed two pre-screening questionnaires online, in which they reported their pre-commercial attitudes towards marijuana and six celebrities, three of whom (Venus and Serena Williams, The Dixie Chicks, and Andy McDonald) appear in the experimental stimuli. The irrelevant celebrities (i.e., Lance Armstrong, Eminem and Britney Spears) were included to rule out non-hypothesized effects (see Results). Both pre-screening questionnaires were 5-point semantic differential scales ranging

from "unfavorable" to "favorable", "bad" to "good", "unpleasant" to "pleasant", "worthwhile" to "worthless", "unacceptable" to "acceptable", and "cool" to "uncool". Based on these questionnaires, those students that were eligible for the experiment were invited to participate 2-10 weeks after prescreening.

2.2. Stimuli

Three anti-drug ads (see Appendix C) produced by The Partnership for a Drug-Free America in the year 2000 were used as the experimental stimuli. The television commercials contain anti-drug messages from celebrities. In order to make the commercials seem related specifically to marijuana rather than just any other illicit drug, each was prefaced by a 5-second screenshot with this caption: "Presented by the Anti-Marijuana Council of America."

2.3 Design

An experiment based on a 2X2 factorial design controlled laboratory experiment crossing balance (low pre-commercial marijuana appeal, high pre-commercial celebrity appeal) or imbalance (high pre-commercial marijuana appeal, high celebrity appeal) with a central processing style (high motivation and high opportunity to watch) or peripheral processing style (low motivation and low opportunity to watch) was used to test the hypotheses. The main dependent measures were marijuana-related SOA based on a post-manipulation SOA test, change in participants' self-reported liking for the celebrity

spokespersons after viewing the commercials, and the level of counter-argument of the messages.

2.4 Procedure

Pre-screening questionnaires designed to measure attitudes toward marijuana and various celebrities were used to determine introductory undergraduate psychology students' eligibility to participate in the proposed study. An unexpected first criterion of eligibility appeared when, in stark contrast to pilot data collected earlier in the year, almost nine-tenths of respondents reported not ever having heard of the celebrity Andy McDonald. Bearing in mind the existence of other eligibility criteria, and owing to the fact that such a drastic diminishment in sample size would be highly detrimental to the study, it was decided that initial unfamiliarity with (as opposed to initial liking of) this particular celebrity would be the first criterion for eligibility. Although this deviated from what was initially planned (i.e., only participants who report liking *all* three relevant celebrities would be eligible), it also increased the scope of the data; for example, the distinction between post-commercial attitudes towards *known* celebrities and the post-commercial attitude towards a previously *unknown* celebrity was made, and additional hypotheses were tested (see Results).

Of all participants who were unfamiliar with Andy McDonald, respondents in the fourth quartile on the Celebrity Appeal Scale (see Appendix

A) for the Williams sisters and the Dixie Chicks met the second criterion for eligibility. Of these participants, those that were in the first and fourth quartiles of the Explicit Attitudes towards Marijuana Scale (see Appendix B) were then classified as meeting the third and final criterion for inclusion in the study. At the end of prescreening thus, participants were in one of two conditions: balance (those who reported liking known celebrity spokespersons, and of being anti-marijuana) and imbalance (those who reported liking known celebrity spokespersons, but of being pro-marijuana)

Participants were tested in groups comprised of up to six individuals. Once they registered for the experiment and arrived at the laboratory, they signed a consent form. After this, they were randomly assigned to the central processing (high motivation and high opportunity to process messages) or peripheral processing (low motivation and low opportunity to process messages) conditions. The experimenter was kept blind to the participants' pre-commercial attitudes to marijuana, in order to prevent experimenter bias. The experiment had 4 conditions (state of balance + central processing, state of imbalance + central processing, state of balance + peripheral processing, and state of imbalance + peripheral processing) in which 79 participants were distributed (see Table1 for cell counts).

All participants were told that they would soon be watching three commercials (the order of which was counterbalanced) presented by the Anti-

Drug Marijuana Council of America. In the central processing condition, participants were instructed that they would be tested on the content of the commercials after viewing (high motivation to process messages) and no secondary task was imposed during the commercials (high opportunity to process messages). In the peripheral processing condition, participants were not instructed about being tested on the content (low motivation to process messages) and a secondary task was imposed during the commercials (low opportunity to process messages) in this condition (Gilbert & Hixon, 1991). This secondary cognitive load was imposed by asking participants to memorize the "telephone number" (three different numbers comprised of seven random digits each) that scrolled across the bottom of the screen during each commercial, based on Wagner and Sundar's modification to Gilbert and Hixon's original manipulation. The modified version (seven-digit "telephone number" instead of the eight-digit manipulation originally used) was implemented to generate simulation of unrelated thoughts viewers might be thinking during commercial breaks. Participants were instructed to write the series of numbers down after watching each of the commercials. These number reports were later used as part of the manipulation check to determine if participants had indeed been memorizing the numbers while viewing the commercials, which in turn engendered peripheral processing.

After viewing the commercials, all participants completed a paper-and-pencil SOA measure, which measured marijuana-related Strength of Association. A short procedural and instrumental description of the SOA measure follows; see Wagner (2001) for a complete description.

The Strength of Association measure is a pencil-and-paper version of the Implicit Attitude Test (IAT; Greenwald, McGhee, & Schwartz, 1998) and was used to assess marijuana-related SOA. The measure was first developed by Lowery, Hardin, and Sinclair (2001) in the context of stereotyping research, but its use was extended further to gauge drug-related SOA by Wagner (2001). Basically, SOA is a primed response latency measure in which researchers prime participants with an object descriptor (such as "puppies") and then record the amount of time it takes the participants to correctly categorize subsequently-presented positive adjectives (such as "good" and "cool") and negative adjectives (such as "bad" and "uncool"). It is theorized that attitude congruency facilitates and incongruency impedes correct categorization of adjectives presented with the prime. The amount of facilitation or impedance is seen as a function of association strength, and is judged by response latency in correct categorization of word-pairs (Wagner, 2004).

Before entering the first of five judgment stages, participants are shown four lists of words (see Appendix D-1). There are two sets of lists, one of which includes a list of marijuana-related words and the other a non-evaluative list of

colors; the second list includes positive and negative adjectives. Eight words of each type are shown on the lists, and these words are later used as items in the association tasks. The list of synonyms of marijuana includes eight of the most popular terms for the substance, based on frequency of response in a pilot study: "pot", "marijuana", "maryjane", "bud", "grass", "hash", "ganja", and "reefer". The list of positive words included: “good”, “pleasant”, "acceptable", "cool", "favorable", "excellent", awesome", and "worthwhile". The list of negative words included: "bad", "unpleasant", "unacceptable", awful, "uncool", "unfavorable", "horrible", and "worthless."

The measure then requires participants to go through a series of five timed judgment tasks. The amount of time available for each task is 15 seconds, and assesses the response latency of participants in correctly categorizing--on critical tasks--marijuana-words with positive adjectives and marijuana-words with negative adjectives. For each of the five stages, a list of words printed singularly in the middle of each page comprise the judgment items, and evaluations are indicated by making a mark at the level of the word in the adjacent appropriate right and left-hand columns. Three of the tasks are for practice and two of tasks are critical tasks (see Appendix D-2 and D-3). As stated before, participants make associations between marijuana-related words and positive adjectives on one critical task, and associations between marijuana-related words and negative adjectives on the others critical task. The total score

for the Marijuana-Negative phase and the total score for the Marijuana-Positive phase is determined for each participant. Two versions of the measure (D-2 before D-3 in one and D-3 before D-2 in the other) are used randomly, in order to check for order effects.

After SOA assessment, participants completed a questionnaire (see Appendix E) containing items directly related to participants' motivation and opportunity to process the commercials as a manipulation check to assess subjective differences in motivation and opportunity among the experimental groups. This assessment of perceived motivation and opportunity to view the commercials, in addition to the number reports mentioned earlier, completed the requirements for a manipulation check. After this, participants rated the same six celebrities on the pre-screening questionnaires again. Finally, participants filled in a questionnaire (see Appendix F) designed to measure the level of counter-argument of the message. The order of dependent measures was uniform across participants. After completing all the dependent measures, participants were debriefed about the study and given experimental credit in exchange for participation.

Chapter 3

Results

3.1. Participants

Almost 84% of respondents to the prescreening questionnaires happened to be unfamiliar with one of the celebrities; only a small percentage (*N*=205) were familiar with Andy McDonald. This made the inclusion of this celebrity in the list of known celebrities unfeasible; instead, it became the first criteria of eligibility that Andy McDonald be an erstwhile unknown to the potential participants. For the respondents who thus qualified (*N*=1171), the second criterion for eligibility was self-reported initial attitude towards the known celebrities, the Williams sisters and the Dixie Chicks. Respondents with scores representing the highest celebrity appeal for both—those in the upper 25%—met the second criterion of eligibility. Of the participants that met the first two eligibility criteria (*N*=391), those that were most significantly pro- or anti-marijuana—those in the upper and lower 25%—met all three criteria and qualified for the study. There were 196 people on the eligibility list, out of which 83 participated in the study. Data from five participants was discarded: two participants did not complete as instructed the SOA measure, and three did not qualify based on their number reports. The final sample comprised 79 participants (distributed in cells as per Figure 2); the mean age was 19.6 years; 41 were men and 38 were women; 68% were Caucasian and the remainder were non-Caucasian.

3.2. Manipulation Checks

There were neither effects of order of presentation of the three commercials, nor version of the SOA measure used, on any of the dependent

measures. However, three participants made errors of more than three digits, on more than one "telephone number". The data from those was discarded, due to doubts about the manipulation having worked for these participants. Of the remaining participants, those that viewed the commercials under high motivation and high opportunity reported a mean motivation of 4.20 (s=.72) and mean perceived opportunity of 4.65 (s=.58) as compared to those who watched with low motivation and low opportunity, who reported a mean motivation of 2.46 (s=.51) and mean perceived opportunity of 1.72 (s=.65). These were two items (see Appendix E) on a scale from 1 (not at all) to 5 (lots). As expected, those that processed the messages centrally reported greater motivation [$t(77)$=-12.36, p<.01] and higher perceived opportunity [$t(77)$=-21.23, p<.01] in watching the commercials than those that processed the messages peripherally.

3.3. Post-hoc Tests

Post-hoc tests were generally conducted only if the Ftest associated with the interaction was significant. In the case of SOA however, a post-hoc investigation was undertaken despite the absence of an interaction, so as to not obscure an existing effect. Tests for the homogeneity of variance were conducted for each one-way ANOVA conducted to compare means. If the Levene statistic corresponded to a p-value less than 0.05, homogeneity of variance was not assumed. In addition, the existence of unequal cell sizes was considered. Based on these facts, the Brown-Forsythe statistic was used to test the overall model

(i.e., to determine whether at least one mean was significantly different from others), and the Games-Howell statistic was determined to be the appropriate adjustment for multiple comparisons within the model (i.e., to determine which of the four means were different). See Seaman, Levin, and Serlin (1991) and Toothacker (1996) for more details about the Brown-Forsythe and Games-Howell statistics and their use in dealing with heterogeneity of variance.

3.4. Dependent Measures

3.4.1. Strength of Association.

To calculate SOA, the total score from the Marijuana-Negative phase was subtracted from the total score of the Marijuana-Positive phase to form an SOA difference score. It should be noted that the more negative the SOA difference score, the relatively more marijuana-negative associations than marijuana-positive associations, and the more anti-marijuana the individual.

SOA scores were then entered as a dependent variable into a two-way ANOVA crossing state of balance and type of processing. The interaction was not significant [$F(1,75)=.38$, *ns*] and the main effects were analyzed. In support of H2, it was found that those in the condition of balance (low marijuana appeal, high celebrity appeal) showed a mean SOA of -5.60 ($s=3.93$) while those in the condition of imbalance (high marijuana appeal, high celebrity appeal) showed a mean SOA of -3.52 ($s=3.63$). The difference in SOA was significant [$F(1,75)=7.43$, $p<.01$)] implying that those who were in a state of balance had more anti-

marijuana SOA than those who were in a state of imbalance. In support of H3, it was found that those who processed messages centrally showed a mean SOA of -3.70 (s=2.89) while those who processed messages peripherally showed a mean SOA of -6.00 (s=4.51). The difference in SOA was significant [F(1. 75)=9.52, p<.01]. Hence, both hypotheses related to this dependent measure (see Figure 2) were supported.

To further investigate differences between conditions, a one-way ANOVA was used to compare means. The Levene statistic (.01) was under 0.05 and so equal variances could not be assumed. The Brown-Forsythe statistic (3, 57.69) had a value of 4.46 which corresponded to p<.01, implying an overall significant difference between the four means compared. On examination of the error plot of means with 95% confidence intervals, it was noted that confidence limits did not overlap with means, and so it is fair to assume that the samples were drawn from populations with different means. Since neither the variances nor the sample sizes were equal, multiple comparisons based on the Games-Howell statistic are reported (see Table 3 for mean differences, standard errors, and p-values). The only significant difference (see Figure 2) was that the mean SOA of those who were in the balance + peripheral condition (M=-6.63. s=5.10) was more anti-marijuana than the mean SOA of those who were in the imbalance and + central condition (M=-2.07. s=3.15). There were also marginally significant differences (p=.07 for both) between the SOA of 1) those that were in the balance + central

condition (*M*=-4.56. *s*=2.37) and those that were in the imbalance + central condition, and 2) those that were in the imbalance + central condition and those that were in the imbalance + peripheral condition (*M*=-5.18. *s*=3.59).

3.4.2 Change in Celebrity Appeal.

The celebrities were initially conceived as belonging to one of two groups: relevant (those appearing in the stimuli--Andy McDonald, Williams sisters, and Dixie Chicks) and irrelevant (those not appearing in the stimuli--Eminem, Britney Spears, and Lance Armstrong). Owing to the unfamiliarity of majority of respondents to Andy McDonald, the groups were now as follows: popular celebrity spokespersons (Williams sisters and Dixie Chicks), a previously unknown celebrity spokesperson (Andy McDonald) and irrelevant celebrities (Eminem, Britney Spears, and Lance Armstrong). Celebrity appeal was measured twice, first in pre-screening (pre-commercial appeal of various celebrities) and then at a point after viewing the commercials (post-commercial appeal of various celebrities).

Difference scores were calculated by subtracting the mean pre-commercial appeal from the mean post-commercial appeal, averaged over the Williams sisters and Dixie Chicks, and averaged over the range of irrelevant celebrities. A negative number indicates that the appeal of the celebrity fell from pre-commercial to post-commercial reporting; a positive number indicates that the

appeal of the celebrity rose from pre-commercial to post-commercial rating. For Andy McDonald, there existed only one (post-commercial) rating of appeal.

Popular Celebrity Spokespersons. There was a significant baseline difference (see Table 2) in the pre-commercial attitude to the Williams sisters, with those in the state of balance self-reporting higher pre-commercial appeal (M=4.54, s=.46) than those in the condition of imbalance (M=4.15, s=.64); $t(77)$=3.14 and p<.01. However, since change in celebrity appeal was represented by a difference score for each participant, these particular analyses were immune to these baseline differences. Also, when averaged over both popular celebrities, there were no baseline differences in pre-commercial appeal for popular celebrities; $t(77)$=-1.38, *ns*. The relevant difference scores were submitted in to a 2X2 factorial ANOVA to examine the effect of interaction between the state of balance and type of processing on change in celebrity appeal regarding the celebrities that were initially well-liked and in the commercials. The interaction (see Figure 3) was significant [$F(1,75)$=4.13, p<.05)], and there was one main effect such that those in a state of balance (M=.14 , s=.46) reported less change in appeal of celebrities involved [$F(1,75)$=6.20, p<.05)] than those in a state of imbalance (M=-.19 , s=.79). Hence, H1a was supported. In the condition of balance, the mean change in celebrity appeal after peripheral processing was .06 (s=.44) while the mean change in celebrity appeal after central processing was .19 (s=.48). In the condition of imbalance, on the other hand, while the mean change in celebrity

appeal after peripheral processing was, like the rest, negligible (M=.01, s=.63), the mean change in celebrity appeal after central processing was -.44 (s=.92). In order to complete testing of H4a, the four means were compared using a one-way ANOVA. The overall model was significant, with a Brown-Forsythe statistic (3, 40) = 3.28 (p<.05), but multiple comparison tests based on the Games-Howell statistic showed that only one difference approached significance (p=.09). This marginal significance can be interpreted as there being somewhat of a greater change (decrease) in appeal of the popular celebrity spokespersons (M=-.42, s=.23) for those in the imbalance + central condition, as compared to the change in appeal (increase) of popular celebrity spokespersons for those in the balance + central condition (M=.21, s=.10) . Hence H4a, according to which, among those in a state of imbalance, those who processed the message centrally would show a greater decrease in appeal as compared to those who processed the messages peripherally, was not supported. However, it should be noted that the only group who showed any decrease in appeal of the popular celebrity spokespersons whatsoever was those in the imbalance + central condition (see Figure 3).

Unknown Celebrity Spokesperson. Since the celebrity was unknown to all participants, only a post-commercial appeal score was available for this celebrity. Although this eliminated the possibility for investigating change in attitude, submitting the relevant difference scores in to a 2X2 factorial ANOVA did offer

the opportunity to examine the effect of interaction between the state of balance and type of processing on the first impression made by an erstwhile unknown celebrity with an anti-marijuana message. In the condition of imbalance, the mean post-commercial score after peripheral processing was 3.98 (s=.80) while the mean post-commercial score after central processing was 3.86 (s=.64). In the condition of balance, on the other hand, the mean post-commercial score after peripheral processing was 3.97 (s=.80) while the post-commercial score after central processing was 4.41 (s=.61). There were no main effects but the interaction approached significance [$F(1,75)=3.12$, p=.08)] (see Figure 4). Since the interaction was not significant, no post-hoc tests were performed.

Irrelevant Celebrities. These were included to test whether or not participants would derogate or boost the specific celebrities in the commercials or just all celebrities in general. No significant change in attitude was found for the irrelevant celebrities. This shows that source-derogation was restricted to celebrity spokespersons and not all celebrities in general.

3.4.3 Counter-argument.

This dependent measure, like celebrity appeal scores, was on a 5-point scale with lower scores indicating less counter-argument of the anti-marijuana messages and higher scores representing more counter-argument of the anti-marijuana messages. There was a significant interaction effect [$F(1,75)=6.54$, p>.05] of balance versus imbalance and type of processing on counter-argument

(see Figure 5). Of those in a state of balance, the level of counterargument had a mean of 2.61 (s=.41) for the peripheral processing condition and a mean of 2.45 (s=.51) for the central processing condition. However, of those in a state of imbalance, the level of counterargument had a mean of 2.80 (s=.54) for the peripheral processing condition and a mean of 3.30 (s=.79) for the central processing condition. There was no main effect of type of processing but there was a significant main effect of balance [$F(1,75)=5.91$, $p<.05$] such that those who in a state of imbalance counter-argued the messages more than those in a state of balance. Hence H1b was supported.

To test H4b, the counter-argument scores was submitted to a one-way ANOVA and means were compared. The Brown-Forsythe statistic (3, 37) = 2.64 approached significance (p=.06), but there were no significant differences between any means based on the Games-Howell statistic. So, of the pro-marijuana, or rather those in a state of imbalance, the ones who processed messages peripherally did not counter-argue the messages significantly less than the ones who processed messages centrally. Hence, H4b was not supported.

The 8 items of the counter-argument questionnaire were submitted to a principal components factor analysis employing a varimax rotation. Three components with eigenvalues greater than 1 were obtained and they accounted for 63.86% of the total variance. The first factor (on which items 1-4 loaded) had an eigenvalue of 2.8 and accounts for 35.12% of the variance; the second factor

(on which items 5-6 loaded) had an eigenvalue of 1.27 and accounts for 15.86% of the variance; and the third factor (on which items 7-8 loaded) had an eigenvalue of 1.03 and accounts for 12.88% of the variance. The reliability of the scale was assessed by obtaining a Cronbach's alpha which had a satisfactory value of .71. On considering the content of individual items, the first factor appears to be related to explicit attitudes towards the celebrities in the commercials (see items 1-4 on Appendix F). The second and third factors were determined to be distinct by the factor analysis, but they both appear to be related to advertisers (see items 4-8 on Appendix F), and were hence combined for further analyses.

The two factors were hence conceptualized to be: 1) explict attitudes towards celebrities, and 2) explicit attitudes towards advertisers. The counter-argument scores for each factor were submitted to a 2X2 ANOVA. Both factors showed the same pattern of results as did overall counter-argument. There was a significant main effect such that those in a state of balance showed significantly less counter-argument (M_1=2.39 , s_1=.71 ; M_2=2.67 , s_2=.40) than those in the state of imbalance (M_1=2.97 , s_1=.81 ; M_2=3.09 , s_2=.86); $F_1(1,75)=5.17$, $p_1<.05$; $F_2(1,75)=10.03$, $p_2<.01$. Also, there was a significant and marginally significant (respectively) interaction effect between the state of balance and type of processing, in line with the pattern of results for overall counter-argument (see Figure 5), on both the counter-argument of the spokesperson ([$F_1(1,75)=5.17$, $p_1=.03$)] and the advertisers [$F_2(1,75)=3.56$, $p_2=.06$)].

3.4.4 Change in Appeal of Marijuana.

An Appeal of Marijuana difference score index was computed to represent the change in the extent to which participants' found marijuana to be desirable from pre-commercial to post-commercial viewing. Change in Appeal of Marijuana was calculated by subtracting post-commercial appeal of marijuana from the pre-commercial appeal of marijuana, for each participant. Both measurements were on a 5-point scale, so the more negative the difference score, the greater the self-reported decrease in appeal of marijuana. The difference scores thus obtained were entered as dependent variables into a 2X2 factorial ANOVA to test for the interaction effect of state of balance and type of processing on change in appeal of marijuana. The interaction was not significant, but the main effect for state of balance was significant [$F(1,75)=11.89$, $p<.05$] with participants in a state of imbalance reporting greater decrease in appeal of marijuana ($M=.37$, $s=.52$) than those in a state of balance reporting lesser decrease in appeal of marijuana ($M=.04$, $s=.29$). The main effect of type of processing approached significance [$F(1,75)=3.36$, $p=.07$] with those that processed messages peripherally reporting greater decrease in appeal of marijuana ($M=.25$, $s=.36$) than those who had processed messages centrally ($M=.07$, $s=.47$).

When post-hoc tests were conducted, the one-way ANOVA rendered a Brown Forsythe statistic (3, 34) = 4.34; $p < .01$). Multiple comparison tests (see Figure 6) revealed that the mean representing the greatest decrease in appeal for

marijuana (*M*=-.45, *s*=-.39), belonged to those in the imbalance + peripheral condition. It was significantly different from the decrease in marijuana appeal for both those in the balance + peripheral condition (*M*=-.10, *s*=.24) and those in the balance + central condition (*M*=.02, s=.33), but not different from those in the imbalance + central condition (*M*=-.23, *s*=.62).

In order to compare post-commercial SOA and post-commercial self-reported attitude towards marijuana, consider Figure 7. Although no statistical comparisons were made, it is interesting to note that the SOA and self-reports were commensurate in all groups except for viewers in the imbalance + peripheral condition. Although these viewers—like those in the imbalance + central condition—self-reported high post-commercial appeal for marijuana, their SOA showed more similarity with viewers in a state of balance, and appeared less pro-marijuana then the SOA of viewers in the imbalance + central condition.

3.5. Ceiling and Floor Effects.

These effects only apply to the relevant within-subjects dependent variables—change in appeal of popular celebrities and change in appeal of marijuana, since eligibility for the experiment was partly based on pre-commercial attitudes towards marijuana (high or low appeal) and popular celebrities (high appeal) held for participants (see Table 2).

The objection that some of the null results were due to ceiling effects could hence be raised; for example, since all participants found the celebrities highly appealing before they viewed the commercials, perhaps they could not report any greater appeal for the celebrities after viewing the commercial because of the restriction of range imposed by the 5-point scale used. With respect to the change in appeal of popular celebrities and on examination of Figure 1, it is clear that the restriction of range imposed by the 5-point scale did not affect the hypotheses tested. For example, reconsidering H1a and H4a in this light, reveals that there was no problem of restriction of range for these hypotheses, since the appeal scores were expected not to increase but to decrease. As mentioned above, the other objection that could be raised concerns the change in appeal for marijuana; for example, there was a main effect for state of balance with participants in a state of imbalance, who reported a greater decrease in appeal of marijuana, than those in a state of balance, who reported a lesser decrease in appeal of marijuana. However, this could be a floor effect, given that those in a state of balance reported a very low pre-commercial for marijuana (M=1.18, s=.27). There were no specific hypotheses regarding change in appeal of marijuana, but this is clearly a problem in terms of interpreting this data. More specifically, the decrease in appeal shown by those in the balance + peripheral condition could have been artificially restricted by scale, and so the data on change in appeal of marijuana must be interpreted with caution when considering viewers in a state

of balance. Floor affects do not apply within the state of imbalance—for instance, when comparing the effect of message processing style on marijuana appeal in pro-marijuana viewers—since they report high pre-commercial appeal for marijuana.

Chapter 4

Discussion

Various hypotheses were supported, while others were not, which raises both theoretical and methodological implications and questions. They will be addressed after a brief discussion of the results associated with each dependent measure.

4.1. Strength of Association

Viewers were categorized as being in a state of balance if they reported high celebrity appeal for known celebrities and low appeal for marijuana prior to testing in the laboratory. In comparison, viewers were categorized as being in a state of imbalance if they reported high celebrity appeal for known celebrities as well as high appeal for marijuana. Congruency or lack thereof, between the attitude towards marijuana and attitude towards anti-marijuana celebrities resulted in viewers who were in a state of balance showing more negative—or rather more anti-marijuana SOA—than viewers who were in a state of imbalance. Further, viewers who processed anti-marijuana message peripherally—or with low motivation and opportunity—had more anti-

marijuana SOA than viewers who processed anti-marijuana messages centrally—or rather with high motivation and high opportunity. This is a replication of Wagner and Sundar's (2003) findings indicating that viewing anti-drug ads less actively leads to more negative SOA than viewing ads effortfully. Finally, although there was not a significant interaction between balance and processing style, it is interesting to note that the most pro-marijuana SOA belonged to the group of viewers who were in the imbalance + central condition.

4.2. Celebrity Appeal

The three groups of celebrities rated were as follows: popular (two sets of celebrities for whom participants reported high appeal) celebrities, an unknown celebrity (one that all participants reported being unfamiliar with), and irrelevant celebrities (those not featured in the anti-marijuana messages used as stimuli in the experiment). The effects on each type of celebrity are discussed below. Each celebrity was rated once before and once after the experimental manipulation, based on which difference scores indicating change in appeal were calculated. The unknown celebrity was rated only once, following the experimental manipulation.

The results show that those in a state of imbalance showed greater decrease in the appeal of initially popular celebrities than those in a state of balance. It was clear that the difference in attitude towards marijuana affected dynamically the way celebrities featured in the anti-marijuana messages were

perceived; anti-marijuana viewers tended to report finding these celebrities as or slightly more appealing after the anti-marijuana message, pro-marijuana viewers reported liking these celebrities significantly less after the anti-marijuana message. It was hypothesized that of those in a state of imbalance, those that process messages centrally would show greater decrease in celebrity appeal than those who processed messages peripherally. While this hypothesis was not supported, it was shown that the only group who reported a decrease in appeal of the celebrities was those in a state of imbalance who processed messages centrally and that this difference was marginally different from those that were in a state of balance and processed messages centrally. Finally, with respect to this measure, the possibility of the ceiling effect mentioned earlier is not particularly worrying, given that the effect is not accentuated by the ceiling effect, but in fact curbed by it, and should be addressed in future studies more carefully.

The unknown celebrity yielded interesting if not solid results. The interaction between balance and processing style on post-commercial appeal approached significance. The pattern of results aligns with the change in appeal of popular celebrities in that, for those who processed messages peripherally, there seemed to be no difference in the rating of this erstwhile unknown celebrity based on the state of balance or imbalance. However, when the messages were processed centrally, those in a state of balance (self-reportedly anti-marijuana

viewers) tended to report greater appeal for this celebrity than those in a state of imbalance (self-reportedly pro-marijuana viewers).

It could be surmised that the derogation of celebrities by pro-marijuana viewers who processed messages centrally was a result of an overall "negative halo effect" in line with research on frustration-aggression and scapegoating (see Dollard, Doob, Miller, Lowrer, & Sears; 1939 and Miller & Bugelski, 1948) created by receiving messages that create a state of imbalance. However, no significant change of appeal was reported in the context of celebrities uninvolved in the anti-marijuana messages, and so the derogation of celebrities can be seen as specific to the celebrities in the commercials. This gives credence to the idea that it is the specifically the celebrity messenger who creates a state of imbalance that is metaphorically shot.

4.3. Counter-argument

This measure captured the overall degree of derogation, differentiation, denial, refutation and concept boost that the viewers engaged in after receiving the anti-marijuana messages from celebrities. Those viewers that were in a state of balance showed lesser counter-argument that viewers that were in a state of imbalance. The interaction between balance and processing style was significant although post-hoc tests revealed no significant differences between four groups. Even so, the pattern observed was that when viewers were in a state of balance, or rather anti-marijuana to begin with, the processing style made little difference

to the level of counter-argument. When viewers were in a state of imbalance, or rather pro-marijuana to begin with, they seemed to counter-argue messages more when their processing style was central than when their processing style was peripheral. This finding supports prior research showing that counter-arguing may be the most effortful of all cognitive responses to counter-attitudinal messages. Distracting people from making counter-arguments, can increase persuasion (Osterhouse and Brock, 1970), which is what seems to have occurred in those viewers who processed messages peripherally.

4.4. Marijuana Appeal

Attitude towards marijuana were reported twice, once before and once after the experimental manipulation, and change in appeal was based on the difference between these two measurements. Those who were in a state of imbalance reported a somewhat greater decrease in appeal for marijuana than those in a state of balance. It should be noted that no hypotheses were generated for this particular measure, in addition to the fact that this result should be interpreted with caution—it may reflect floor effects, based on the fact that anti-marijuana viewers reported being more anti-marijuana than pro-marijuana viewers reported being pro-marijuana. It is interesting that--even though this difference was not statistically significant--of those in a state of imbalance, viewers who processed anti-marijuana messages peripherally reported a greater decrease in marijuana appeal than viewers who processed messages centrally.

Although viewers in a state of imbalance who processed messages peripherally self-reported the greatest decrease in appeal for marijuana, the post-commercial appeal for marijuana was still high for these viewers. To explore the relationship between SOA and self-reports, the two measures were informally compared (see Figure 7). It was observed that SOA scores for these viewers were more comparable to SOA scores of those in a state of balance, and not with the SOA scores of those in a state of imbalance that processed messages centrally, as suggested by the post-commercial self-reported appeal for marijuana. This underscores the importance of including both implicit and explicit measures, for a clearer picture, especially when studying attitudes towards controversial concepts.

4.5. Summary

In summary, the results obtained supported most of the hypotheses. H1 and H2 pertained to the effects of balance on change in celebrity appeal and counter-argument, and were fully supported. Based on the first two hypotheses, it can be stated that those viewers who were in a state of imbalance at the outset (high celebrity appeal, high marijuana appeal) attempted to resolve the imbalance by greater decrease in the appeal of featured celebrities, and greater counter-argument of the message, compared to those viewers who were in a state of balance at the outset (high celebrity appeal, low marijuana appeal). H3 related to the effect of processing style on SOA, and was supported as well.

Based on this hypothesis, Wagner and Sundar's findings were replicated, and it was found that those viewers who employed a peripheral processing style (low motivation, low opportunity) would have more anti-marijuana SOA compared those viewers who employed a central processing style (high motivation, high opportunity), regardless of a pre-existing state of balance or imbalance. H4 was relevant to the differential effect of processing style on viewers who were in a state of imbalance. Although neither part of this last hypothesis was statistically supported, the pattern of results obtained aligns well with results expected—those that were in a state of imbalance did tend to show a greater decrease in appeal of celebrities and more counter-argument when the processing style was central as opposed to peripheral.

4.6. Limitations and Suggestions for Future Research

Participants were classified as belonging to a state of balance or imbalance based on self-reported attitudes towards marijuana. This may seem antithetical to the idea that both implicit and explicit measures are important to assess, but was done because of a practical issue—many eligibility criteria were necessary to test the hypotheses in this study, which led to a very low ratio of prescreened participants to eligible participants. It would have been impossible to pre-screen participants using the SOA measure, hence self-reports alone were used. Given that that only highly pro- and highly anti-marijuana subjects were chosen for this study, and that there was more than a two-week gap in explicit assessment of

appeal for marijuana, all the steps necessary to enhance sensitivity of self-report measures were undertaken. However, in future studies, it would be prudent to administer the SOA measure twice.

Inclusion of an SOA measure in pre-screening would also make possible investigation of SOA change (see Wagner & Sundar, 2003)—an important aspect of measuring concept boost. For example, this study measures well the derogation of the celebrities, but the nuanced possibilities of concept boost (with respect to marijuana) and differentiation, denial, and refutation (with respect to the featured celebrities) are lumped in to one measure (counter-argument). Of all these, it is important that concept boost be more thoroughly assessed owing to its ironic effects, which would necessitate administration of the SOA measure twice, both before and after the manipulation, as suggested above.

In addition to investigating change in SOA, it would also benefit this area of research to include measures of how appealing viewers found the featured commercials. This becomes especially important when commercials do not feature celebrities. Not all public communication features celebrities; the principle of balance, however, may apply even when there are no pre-existing attitudes towards the spokesperson. Maintenance of original attitudes, in the absence of source derogation, may be accomplished by derogation of attributes of the commercial (for example, the featured person/s, visuals, jingles, or context selected for execution of the idea).

It may be the case that the type of messages presented in these three commercials, in particular, were conducive to counter-argument. McGuire and Papageorgis (1961) found that a two-sided appeal would be superior to a one-sided appeal in reducing resistance to a counter-communication attacking a belief prevalently and strongly held by a message recipient. All the messages presented in these commercials were one-sided, which serves as a precautionary note about how the results obtained in this study may be affected by attributes particular to these commercials, and it would be wise to include other types of messages from celebrities in future studies.

Finally, a larger, non-student sample would inspire more confidence in the generalizations drawn here, and would perhaps have found significant differences where this research did not. Also, the number of ads, and the number of viewers was small. These limitations are not crippling however, and the fact that this study found significant differences, despite the small number of participants, speaks well for the effect size.

4.7. Implications

Cialdini (1997) offers examples of how close communication between advertisers and social scientists leads to the creation of effective public service communication. The present research serves to underscore that notion. Advertisers—especially those involved in public service communication—seem aware that their audience is comprised of "cognitive misers" (Fiske and Taylor,

1984), and spend millions of taxpayers' dollars to create hard-hitting campaigns that "grab" the viewer. However, this research demonstrates that the creation of ads that encourage central processing may have unintended effects of derogation of the celebrity spokesperson, and boosting of the attitude that the advertiser seeks to change, in an effort by the viewer to resolve the imbalance created by the message. This is especially so if the message is highly counter-attitudinal for the viewer, and signals the need for market segmentation, even when the communication is not-for-profit. This study suggests that social marketers need to be sensitive to the diversity within target populations and the concurrent need to allocate scarce resources—especially in the case of public service communication—effectively. These comprise some of the practical applications of this research.

Methodological implications of this study involve the use of implicit measures, initially developed to be relatively straightforward substitutes for explicit measures. However, studies indicated that the relations between implicit and explicit measures were often very weak (e.g., Wittenbrink, Judd, & Park, 2001). Researchers first assumed that this was because the explicit measures allowed for the possibility of deception, but later investigators (see Wagner, 2003) have suggested that measures like SOA do more than just sidestep the methodological pitfalls of explicit measures—they tap in to automatic attitude activation that affects behavioral decision-making. In this study, both SOA and

self-reports were included. A time lag between administrations of self-reports helped to increase their sensitivity, and they clearly yielded data that was valuable, especially on comparison of results from the SOA measure with corresponding results from self-reports. It is hence suggested that researchers pay more attention to the reasons behind the debate raging between proponents of implicit and explicit measures (see DeCoster, Banner, Smith, & Sevin; 2006), and attempt to include both types of measures in their studies.

This research also has theoretical implications. Balance theory has unfortunately been relegated to the status of somewhat of a relic in the past couple of decades. A few social scientists (see Greenwald et al, 2002; and Woodside and Chebat, 2001) have offered rationales for why it has not spawned new research in recent times, and have called for the resurrection of this traditional theory, based on its widespread applicability to social perception, attribution, attitude change, communication, interpersonal attraction, and group formation. Greenwald et al have indicated that there has been unresolved competition between its theoretical avatars like congruity theory, symmetry theory, and dissonance theory (see Rodrigues and Newcomb, 1980) but that the underlying principle of balance, on which they are based, cannot be contested. The present study, like a few other studies (see Russell and Stern, 2006; Crimmins and Horn, 1996; and Woodside, 2004) seeks to re-initiate balance

theory in to social psychology, and foster its application in public communication.

Table 1. Number of Participants per Cell.

	Peripheral Processing	Central Processing	*Totals*
Balance	23	27	*50*
Imbalance	16	13	*29*
Totals	*39*	*40*	*N=79*

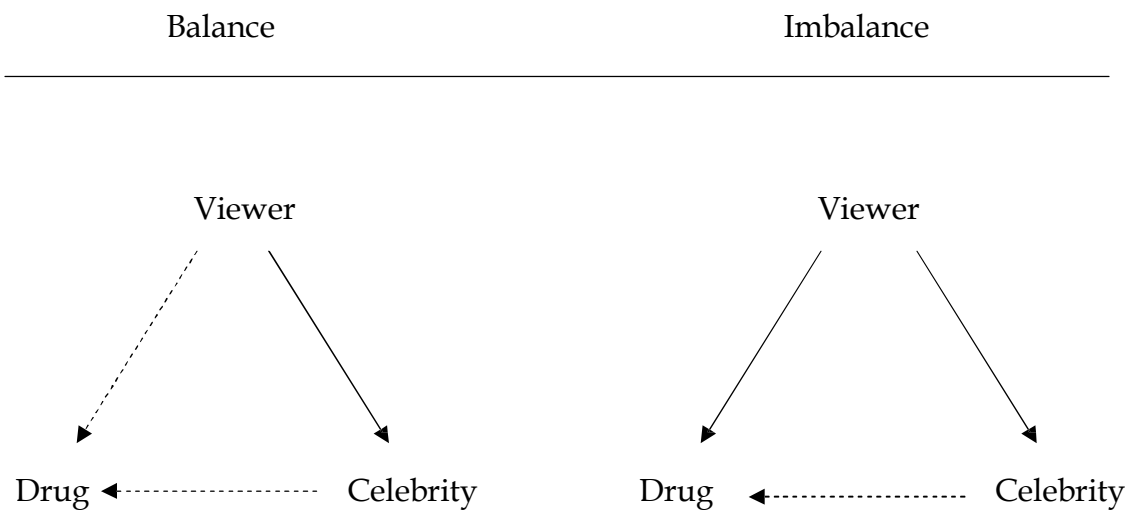
Table 2. Pre-commercial Appeal of Marijuana and Relevant Celebrities.

	Pre-commercial Appeal			
	Marijuana	Williams sisters	Dixie Chicks	Andy McDonald
Balance	1.18 *(.27)*	4.54 *(.46)*	4.19 *(.81)*	Unknown
Imbalance	3.90 *(.63)*	4.15 *(.64)*	4.22 *(.70)*	Unknown

Table 3. Multiple Comparisons of Mean Difference in SOA.

		Mean Difference	Standard Error	Games-Howell Statistic
Imbalance + Peripheral				
	Balance + Peripheral	-1.46	1.39	.72
	Balance + Central	-.60	.99	.93
	Imbalance + Central	-3.11	1.21	.07
Balance + Peripheral				
	Balance + Central	-2.06	1.18	.32
	Imbalance + Central	-4.57*	1.38	<.01
Imbalance + Central				
	Balance + Central	2.51	.96	.07

Figure 1. The States of Balance and Imbalance in this Study.



Solid and dashed lines indicate positive and negative attitudes respectively.

Figure 2. The Effect of Congruity and Processing Style on SOA.

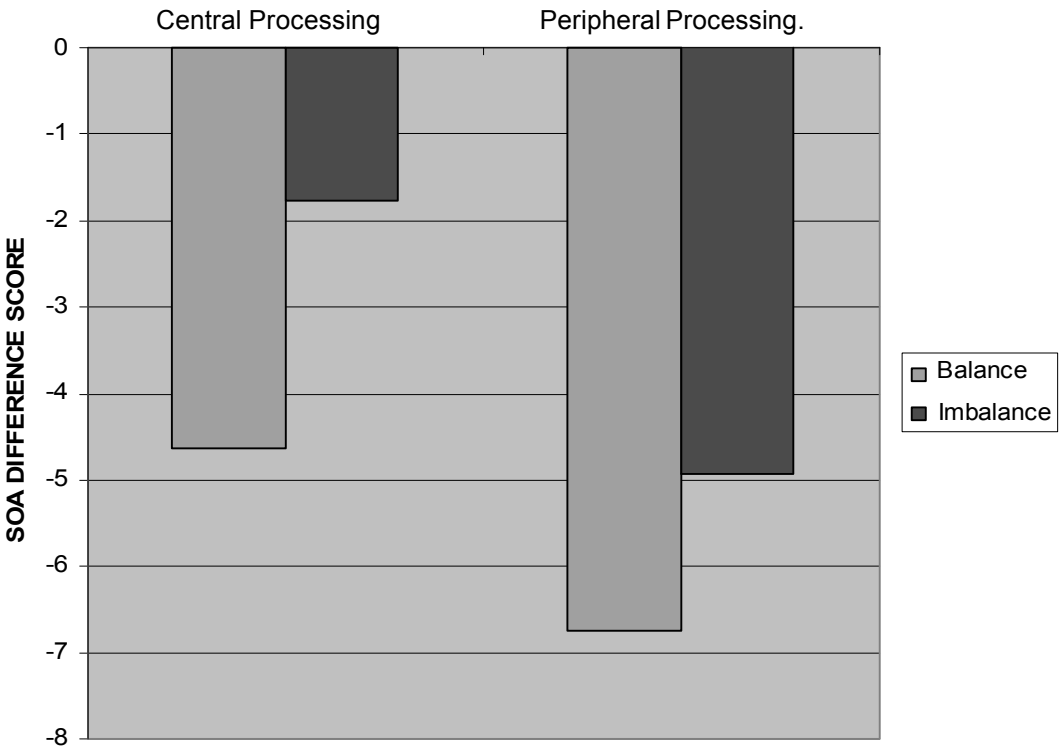


Figure 3. The Effect of State of Balance and Processing Style on Change in Appeal of Popular Celebrity Spokespersons.

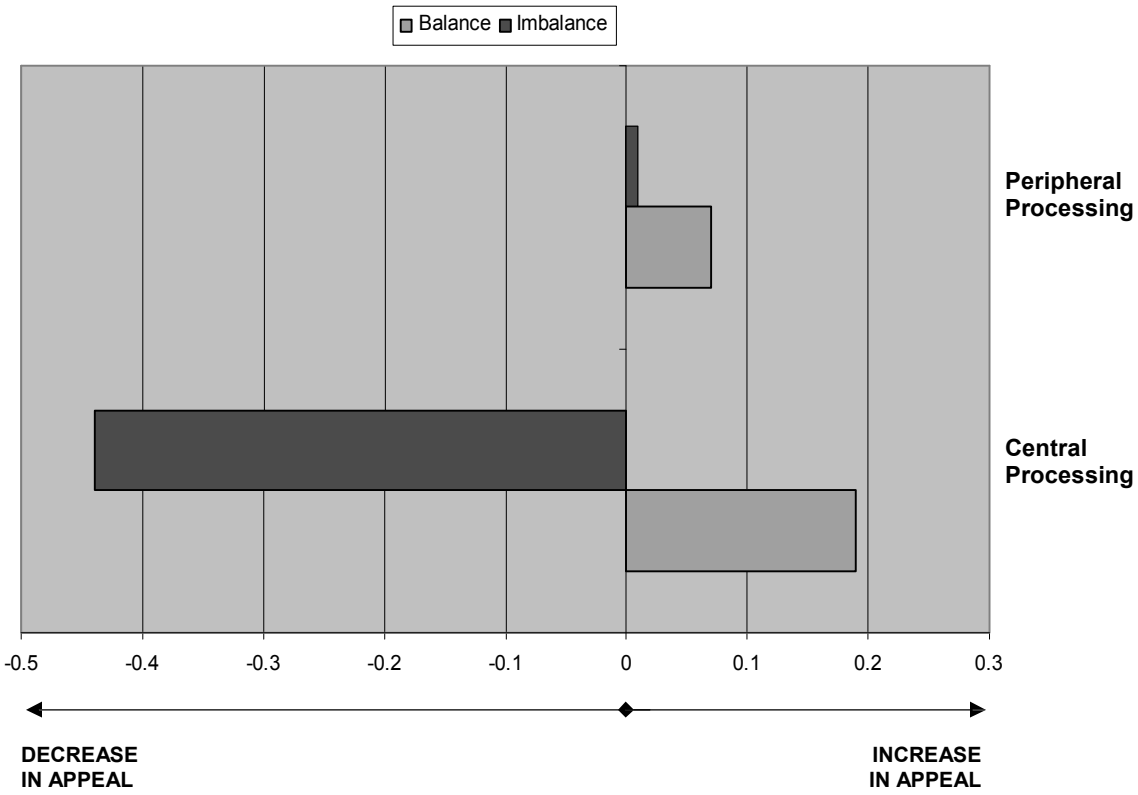


Figure 4. The Effect of State of Balance and Processing Style on Post-commercial Appeal of Unknown Celebrity

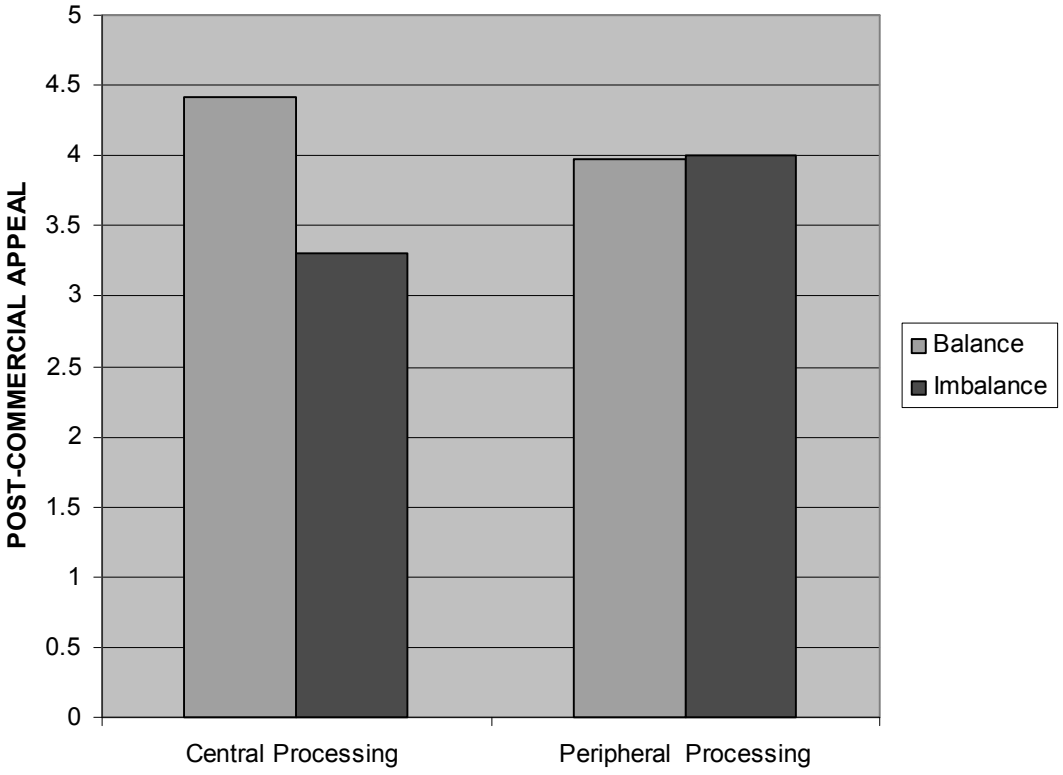


Figure 5. The Effect of State of Balance and Processing Style on Counter-argument.

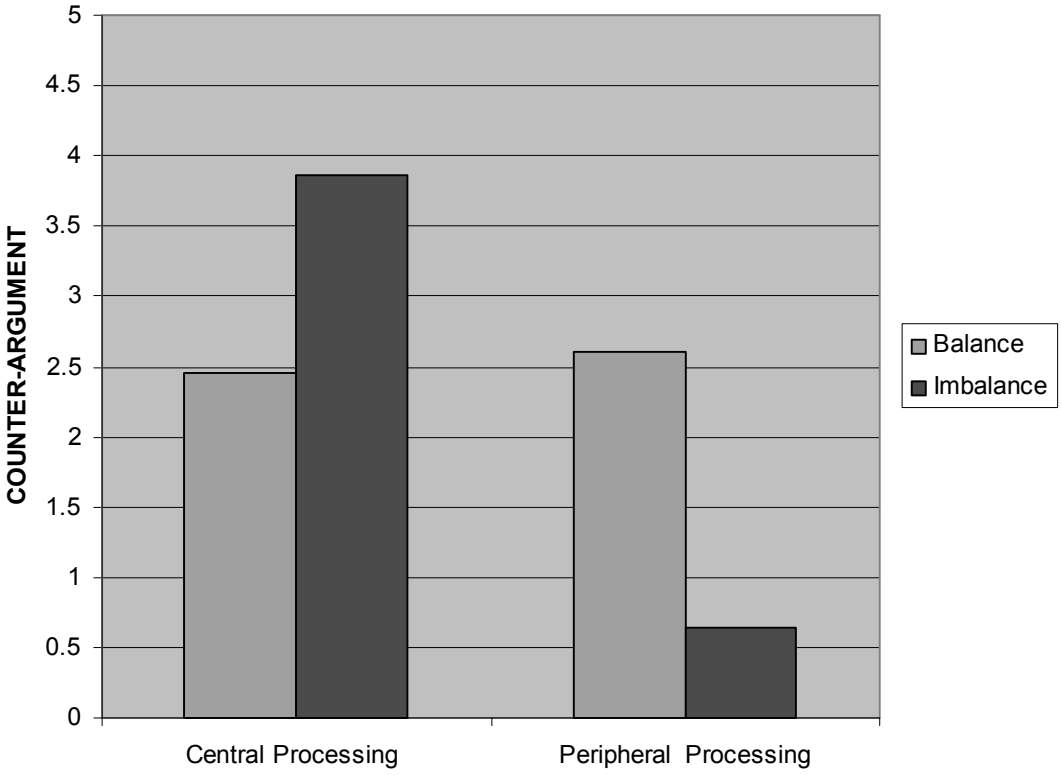


Figure 6. The Effect of State of Balance and Processing Style on Change in Appeal of Marijuana.

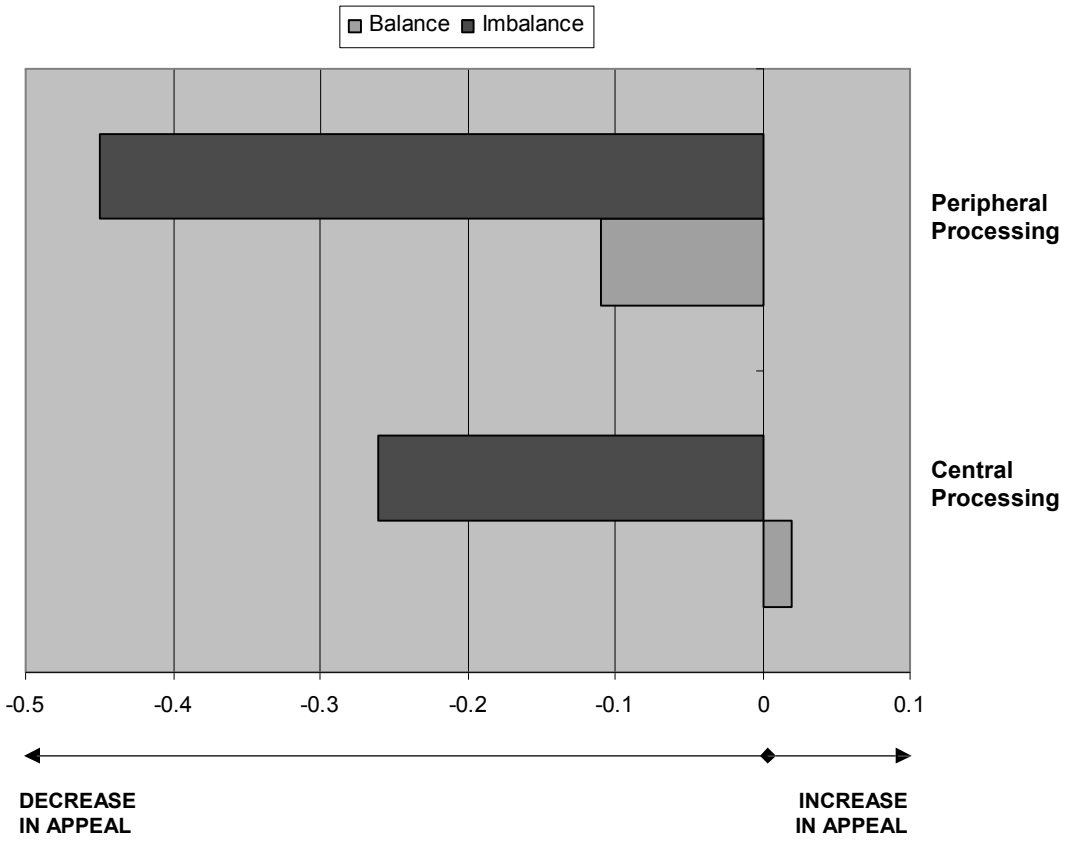
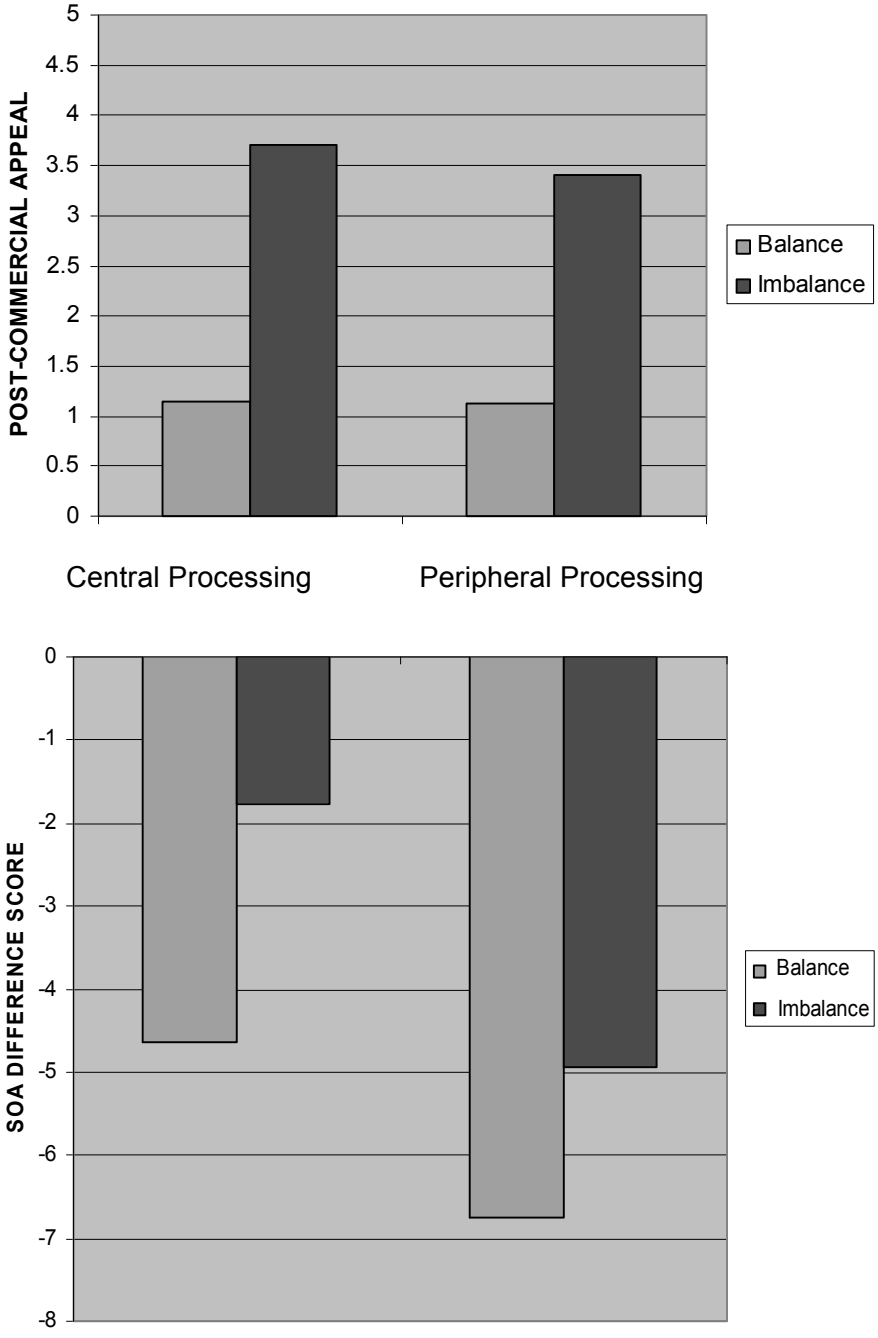


Figure 7. The Comparison between Post-commercial Appeal for Marijuana and Post-commercial SOA.



Appendix A

Attitude towards Marijuana

Please circle the number that best indicates how you feel.

a) Marijuana is: 1 ------ 2 --------- 3 ---------- 4-------- 5
Favorable Unfavorable

b) Marijuana is: 1 ------ 2 --------- 3 ---------- 4-------- 5
Good Bad

c) Marijuana is: 1 ------ 2 --------- 3 ---------- 4-------- 5
Pleasant Unpleasant

d) Marijuana is: 1 ------ 2 --------- 3 ---------- 4-------- 5
Acceptable Unacceptable

e) Marijuana is: 1 ------ 2 --------- 3 ---------- 4-------- 5
Cool Uncool

f) Marijuana is: 1 ------ 2 --------- 3 ---------- 4-------- 5
Worthwhile Worthless

Appendix B

Celebrity Appeal

Please circle the number that best indicates how you feel.

1) Andy McDonald is:

1 ------ 2 --------- 3 ---------- 4 ------- 5
Favorable Unfavorable

1 ------ 2 --------- 3 ---------- 4 ------- 5
Good Bad

1 ------ 2 --------- 3 ---------- 4 ------- 5
Pleasant Unpleasant

1 ------ 2 --------- 3 ---------- 4 ------- 5
Acceptable Unacceptable

1 ------ 2 --------- 3 ---------- 4 ------- 5
Cool Uncool

1 ------ 2 --------- 3 ---------- 4 ------- 5
Worthwhile Worthless

2) Serena and Venus Williams are:

1 ------ 2 --------- 3 ---------- 4 ------- 5
Favorable Unfavorable

1 ------ 2 --------- 3 ---------- 4 ------- 5
Good Bad

1 ------ 2 --------- 3 ---------- 4 ------- 5
Pleasant Unpleasant

1 ------ 2 --------- 3 ---------- 4 ------- 5
Acceptable Unacceptable

1 ------ 2 --------- 3 ---------- 4 ------- 5
Cool Uncool

1 ------ 2 --------- 3 ---------- 4 ------- 5
Worthwhile Worthless

3) The Dixie Chicks are:

1 ------ 2 --------- 3 ---------- 4 ------- 5
Favorable Unfavorable

1 ------ 2 --------- 3 ---------- 4 ------- 5
Good Bad

1 ------ 2 --------- 3 ---------- 4 ------- 5
Pleasant Unpleasant

1 ------ 2 --------- 3 ---------- 4 ------- 5
Acceptable Unacceptable

1 ------ 2 --------- 3 ---------- 4 ------- 5
Cool Uncool

1 ------ 2 --------- 3 ---------- 4 ------- 5
Worthwhile Worthless

4) Lance Armstrong is:

1 ------ 2 --------- 3 ---------- 4 ------- 5
Favorable Unfavorable

1 ------ 2 --------- 3 ---------- 4 ------- 5
Good Bad

1 ------ 2 --------- 3 ---------- 4 ------- 5
Pleasant Unpleasant

1 ------ 2 --------- 3 ---------- 4 ------- 5
Acceptable Unacceptable

1 ------ 2 --------- 3 ---------- 4 ------- 5
Cool Uncool

1 ------ 2 --------- 3 ---------- 4 ------- 5
Worthwhile Worthless

5) Eminem is:

1 ------ 2 --------- 3 ---------- 4 ------- 5
Favorable Unfavorable

1 ------ 2 --------- 3 ---------- 4 ------- 5
Good Bad

1 ------ 2 --------- 3 ---------- 4 ------- 5
Pleasant Unpleasant

1 ------ 2 --------- 3 ---------- 4 ------- 5
Acceptable Unacceptable

1 ------ 2 --------- 3 ---------- 4 ------- 5
Cool Uncool

1 ------ 2 --------- 3 ---------- 4 ------- 5
Worthwhile Worthless

6) Britney Spears is:

1 ------ 2 --------- 3 ---------- 4 ------- 5
Favorable Unfavorable

1 ------ 2 --------- 3 ---------- 4 ------- 5
Good Bad

1 ------ 2 --------- 3 ---------- 4 ------- 5
Pleasant Unpleasant

1 ------ 2 --------- 3 ---------- 4 ------- 5
Acceptable Unacceptable

1 ------ 2 --------- 3 ---------- 4 ------- 5
Cool Uncool

1 ------ 2 --------- 3 ---------- 4 ------- 5
Worthwhile Worthless

Appendix C

Stimuli

"Andy MacDonald" (TV spot; 30 seconds)

This ad centers around professional skateboarder Andy MacDonald describing his job. In it, he explains that getting to the place he is in his career takes a lot of motivation, hard work, and dedication. Further, he says that he has been riding for thirteen years, and that it took him six years just to "learn to skate." He claims that there are boarders out there who are just as talented as any athlete in any professional sport and that, no matter who it is, wiping out on a skateboard is part and parcel of the experience. As he speaks, several shots of him doing stuntwork, both on pavement and on a half-pipe, are shown in quick procession, shot from oblique angles and tinted in various bright colors. Towards the end of the spot, he admits that drugs "will only slow you down" and that he couldn't do what he does if he took drugs. The commercial ends with Andy stating "that, right there, is my idea of getting high" as viewers are shown a shot of him flying off the end of a half-pipe.

"Serena and Venus Williams" (TV spot; 30 seconds)

This ad centers around Serena and Venus Williams, two professional tennis stars. As the commercial opens, Serena explains that "As a kid, I remember dreaming of becoming the best." The spot then cuts to Venus saying "Of course, I do more than dream – I also make plans." Venus then explains that she is always working hard at becoming better, looking for new plateaus to which to raise her abilities. The PSA then cuts back to Serena stating "I don't have to mess around with the drugs, 'cause I know that it's not good for me...it's not good for anything that I do." The images that compose the ad are quickly cut close-ups of various body parts of the two female athletes juxtaposed with medium range shots of each of them talking. The commercial closes with Serena stating "Drugs kill dreams – it's just not worth it," and finally, the ad ends with a shot of the two laughing as we hear one of them say "It's your choice. You just have to make the best one."

"Dixie Chicks" (TV spot; 30 seconds)

This PSA begins with the Dixie Chicks, an all-female alternative rock band, introducing themselves and describing themselves as being "dorks" in their youth. The three band members then go on to discuss being victims of peer pressure at a young age, but that having a creative outlet such as music allowed them to overcome bad influences from their cohort. They say that that time was among the hardest in their lives, but that it is also the time when one discovers his or her talents and passions. Throughout the discussion, the ad quickly cuts back and forth between shots of the conversation (shot in black and white) and stylized concert footage. The commercial ends with one of the band members stating "I couldn't imagine [living out my dreams] with something like drugs hanging over my head" in a voice-over.

Appendix D-1

The four lists of words included in the SOA Measure.

COLORS	DRUG-RELATED
YELLOW	MARIJUANA
GREEN	HASH
RED	REEFER
PINK	POT
BLUE	BUD
BROWN	MARYJANE
ORANGE	WEED
PURPLE	GANJA

positive	*negative*
acceptable	*unacceptable*
worthwhile	*worthless*
good	*bad*
excellent	*horrible*
pleasant	*unpleasant*
favorable	*unfavorable*
cool	*uncool*
awesome	*awful*

Appendix D-2

Critical Task for Marijuana-Positive Associations.

MARIJUANA or *positive* COLOR or *negative*

YELLOW
acceptable
MARIJUANA
horrible
HASH
good
PINK
unacceptable
POT
uncool
BLUE
excellent
BUD
bad
MARYJANE
pleasant
BROWN
cool
ORANGE
favorable
WEED
unfavorable
RED
unpleasant
GREEN
worthwhile
REEFER
worthless
PURPLE
awesome
GANJA
awful

Appendix D-3

Critical Task for Marijuana-Negative Associations.

COLOR or *positive*	MARIJUANA or *negative*
BLUE	
excellent	
BUD	
bad	
MARYJANE	
pleasant	
BROWN	
cool	
ORANGE	
favorable	
WEED	
unfavorable	
YELLOW	
acceptable	
MARIJUANA	
horrible	
HASH	
good	
PINK	
unacceptable	
POT	
uncool	
RED	
unpleasant	
GREEN	
worthwhile	
REEFER	
worthless	
PURPLE	
awful	
GANJA	
awesome	

Appendix E

Manipulation Check

Please circle the number that best indicates how you feel.

1. How motivated were you to watch these commercials closely?

1 --------- 2 --------- 3 ---------- 4 ------- 5

Not at all Lots

2. How much opportunity did you have to watch these commercials closely?

1 --------- 2 --------- 3 ---------- 4 ------- 5

Not at all Lots

Appendix F

Counter-argument

Please fill in the response that best indicates how you feel.

1 --------- 2 ---------- 3 ---------- 4 ---------- 5
Strongly disagree Strongly agree

1. I like these celebrities more after viewing the commercials. _____

2. I respect these celebrities more after viewing the commercials. _____

3. The celebrities believed what they said in the commercials. _____

4. The celebrities were in it for the money. _____

5. The celebrities are well qualified to be spokespersons. ____

6. These commercials are a fair representation of reality. _____

7. Advertisers understate the problem in commercials like these. ____

8. Advertisers overstate the problem in commercials like these. _____

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